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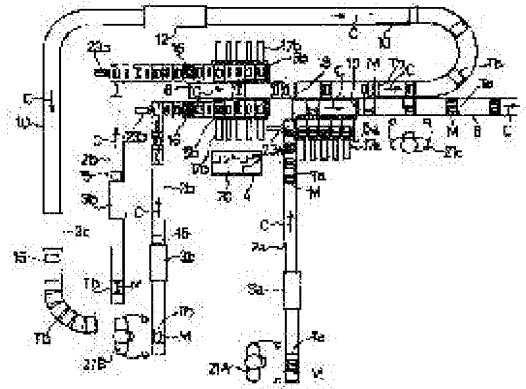
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(54) **SELECTIVE COMBINATION METERING DEVICE**

(57)Abstract:

PROBLEM TO BE SOLVED: To combine and measure correctly even when a transfer order is changed by transferring a container equipped with a memory medium storing a weight value of an object to be measured, together with the object to be measured.

SOLUTION: A combination-operating means which combines weight values obtained from a parent meter 3a and a child meter 3b and selects a combination close to a target value within a constant permissible range is set inside a controller 20 controlling the whole of an apparatus. A memory medium such as a magnetic tape or the like is attached beforehand to a bottom part of a transfer container Tb. The transfer container Tb with the memory medium (magnetic tape) storing a weight value of an object M to be measured is carried in by a second carry conveyor 2b together with the object M to be measured. Even when the transfer conveyor Tb storing the object M to be measured is removed in the middle of the carry-in or a carry-in order is changed, the object M to be measured which is carried into a second collection point 5b agrees with the weight value of the combined and selected object M to be measured, thereby realizing correct and easy combination and measurement on the basis of the weight value stored in the magnetic tape.

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* NOTICES *

CLAIMS

[Claim(s)]
[Claim 1] Are the combination metering installation which carries out combination measuring of two or more measured objects, and contain a measured object and it is conveyed united with a measured object. Two or more containers with a storage with which the storage with which goods information including the weight value of a measured object is written in or read is attached, The combination metering installation equipped with the write-in means which writes said goods information in said storage, the read-out means which reads said goods information from said storage, and a combination operation means to be in fixed tolerance and to choose the combination near desired value combining the weight value of each read ********.
[Claim 2] The combination metering installation equipped with the carrying-in conveyor which carries in two or more containers with a storage which contained the measured measured object in claim 1 to a meeting place, the set conveyor which takes out two or more containers with a storage as which combination was chosen by said combination operation means from said meeting place, and the injection device which feed into said set conveyor the container with a storage with which said combination was chosen from said meeting place.

[Translation done.]

* NOTICES *

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention carries out combination measuring of two or more measured objects, and relates to the combination metering installation which obtains the goods of a fixed weight value.
[0002]
[Description of the Prior Art] For example, goods like food boiled down in soy or boiled shellfish in soy sold in a supermarket etc. are sold in a container with the gestalt by which the thing of fixed weight was contained in many cases. It measures with a measuring instrument, conveying the container which subdivided and contained goods (measured object) from the former as equipment which cuts down the goods of such a fixed weight value. After measuring, to a

meeting place, convey by conveyance conveyor and carry out a combination operation based on each weight value in a meeting place with a combination operation means, and are in fixed tolerance and the combination near desired value is chosen. The combination metering installation which only the container of the selected measured object is discharged [metering installation] and gathers it from a conveyance conveyor is known.

[0003] In this case, according to that conveyance sequence, the weight value of the measured object measured with the measuring instrument is sent to a combination operation means one by one, a combination operation is carried out, and the measured object by which combination selection was made is discharged.

[0004]

[Problem(s) to be Solved by the Invention] however, and above conventional equipment falls or [that one of the containers which contained the measured object while being conveyed to the meeting place, after the measured object was measured is sampled on the way] or when the trouble where a container will bite to a manufacture device and will need to remove the damaged container occurs Since the sequence of the measured object which arrives at a meeting place changes, the data stream sent in order of conveyance will not be in agreement with the sequence of a measured object, and exact combination measuring cannot be performed. For this reason, once combination measuring was stopped, the weight value of a measured object needed to be reput in in order of the right, and there was a problem that the trouble processing by conveyance sequence changing was complicated.

[0005] Even if this invention solves the above-mentioned trouble and changes the conveyance sequence of a measured object, it aims at offering the combination metering installation which can perform easy and exact combination measuring.

[0006]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, the combination metering installation concerning one configuration of this invention Are the combination metering installation which carries out combination measuring of two or more measured objects, and contain said measured object and it is conveyed united with a measured object. Two or more containers with a storage with which the storage with which goods information including the weight value of a measured object is written in or read is attached, It has the write-in means which writes said goods information in said storage, the read-out means which reads said goods information from said storage, and a combination operation means to be in fixed tolerance and to choose the combination near desired value combining the weight value of each read ********.

[0007] Since the container with a storage which has memorized the weight value of a measured object is conveyed united with a measured object according to the above-mentioned combination metering installation, even if a measured object is in the middle of conveyance, it is removed or conveyance sequence interchanges, exact combination measuring can be performed based on the weight value memorized to the storage.

[0008] It has the carrying-in conveyor which carries in two or more containers with a storage which contained the measured measured object preferably to a meeting place, the set conveyor which takes out two or more containers with a storage as which combination was chosen by said combination operation means from said meeting place, and the injection device which feeds into said set conveyor the container with a storage with which said combination was chosen from said meeting place. Therefore, taking out from the meeting place of the measured object by which carrying in and combination selection were made to the meeting place of a measured object is smoothly made according to a carrying-in conveyor, a set conveyor, and an injection device, respectively.

[0009]

[Embodiment of the Invention] Hereafter, the operation gestalt of this invention is explained based on a drawing. The top view of the combination metering installation applied to 1 operation gestalt of this invention at drawing 1 is shown. This equipment contains a measured object like a salted cod roe with red pepper, and is conveyed united with a measured object. Two or more containers with a storage with which the storage with which goods information including the weight value of a measured object is written in or read is attached are used. Parent measuring of the measured object which constitutes the principal part of combination goods in case

combination measuring of two or more measured objects is carried out, the goods of a fixed weight value are obtained and two or more measured objects are combined is carried out, and after carrying out child measuring of the measured object which constitutes the remainder, both the weight value is combined.

[0010] This equipment has parent weigh machine 3a which carries out parent measuring while conveying the container Ta for goods which laid the measured object M. 1st carrying-in conveyor 2a which carries in at a horizontal the container Ta for goods which laid the measured object M by which parent measuring was carried out in the conveyance direction C to 1st meeting place 5a, It has 2nd carrying-in conveyor 2b which carries in to a horizontal the container Tb for conveyance which has child weigh machine 3b which carries out child measuring, conveying the container Tb for conveyance which laid the measured object M, and laid the measured object M by which child measuring was carried out to 2nd meeting place 5b in the conveyance direction C. In this example, 2nd carrying-in conveyor 2b is arranged at two juxtaposition in order to make [many] the number of combination participation of the measured object by which child measuring is carried out.

[0011] As shown in drawing 2 , a storage 1 like a magnetic tape is beforehand stuck on the pars basilaris ossis occipitalis of the container Tb for conveyance. The goods information which includes the weight value of a measured object in this magnetic tape 1 is memorized. A name of article (bar code), manufacture years time, etc. are included in goods information. A magnetic tape may be stuck on the flank of the container Ta for conveyance. As a storage 1, a magnetic card, an optical card, a wireless-type IC card, a bar code, etc. may be used other than the magnetic tape with which writing and read-out are performed to the magnetic head (I/O head) by contact or non-contact.

[0012] Like drawing 1 , this equipment is equipped with a combination operation means 4 to be in fixed tolerance and to choose the combination near desired value, combining the weight value of the measured object of parent measuring obtained from above-mentioned parent weigh machine 3a and child weigh machine 3b, and child measuring. This combination operation means 4 is established in the controller 20 which controls this whole combination metering installation.

[0013] The set conveyor 6 is arranged between 2nd meeting place 5b of the above-mentioned 2nd carrying-in conveyor 2b and 2b, and 5b, and two or more containers Tb for conveyance (container with a storage) with which combination was chosen from the 2nd meeting place 5b and 5b are taken out at a level with the conveyance direction C. The container Tb for conveyance with which combination was chosen is extruded in the direction which intersects perpendicularly in the conveyance direction C, and is fed into the set conveyor 6 from the 2nd meeting place 5b and 5b by injection device 17b which consists of two or more pushers. Depending on the combination result of an operation, two or more containers Tb for conveyance are thrown into coincidence. If the container Tb for conveyance is fed into the set conveyor 6, the following container Tb for conveyance will be extruded by 2nd meeting place 5b by extruder style 23b, and sequential carrying in will be carried out.

[0014] The above-mentioned set conveyor 6 is adjoined and the goods conveyance conveyor 8 is formed. This goods conveyance conveyor 8 conveys the container Ta for goods with which combination was chosen and taken out from 1st meeting place 5a at a level with the conveyance direction C. The container Ta for goods with which combination was chosen is extruded in the direction which intersects perpendicularly in the conveyance direction C, and is fed into the goods conveyance conveyor 8 from 1st meeting place 5a by injection device 17a which consists of two or more pushers. If the container Ta for goods is fed into the goods conveyance conveyor 8, the following container Ta for goods will be extruded by 1st meeting place 5a by extruder style 23a, and sequential carrying in will be carried out.

[0015] The above-mentioned container Ta for goods is conveyed in the conveyance direction C synchronizing with the container group which consists of two or more containers Tb for conveyance which the above-mentioned combination is chosen and are taken out by set conveyor 6, and the measured object M of the container Tb for conveyance is manually moved to the container Ta for goods between them. The transfer conveyor 10 connected to down-stream edge 6a of the above-mentioned set conveyor 6 makes the container Tb for conveyance of the empty after the measured object M was moved to the container Ta for goods transport to a horizontal to the predetermined location near the upper edge of 2nd conveyance conveyor 2b

and 2b.

[0016] A shutter 18 is formed in the predetermined location near upper edge 10a of the above-mentioned transfer conveyor 10, the shutter 19 is formed in the predetermined location of the goods conveyance conveyor 8, respectively, and the synchronization with the above-mentioned container Tb for conveyance and the container Ta for goods is taken by the closing motion timing of these shutters 18 and 19. Moreover, the transfer conveyor 10 has the washing station 12 which washes the container Tb for conveyance, and container weigh machine 3c measured while conveying the weight (tare) of the empty container Tb for conveyance. With this equipment, plane configuration of 1st carrying-in conveyor 2a which conveys the above-mentioned measured object M, 2nd carrying-in conveyor 2b, the set conveyor 6, the goods conveyance conveyor 8, and the transfer conveyor 10 is carried out.

[0017] It is near the downstream of above-mentioned child weigh machine 3b and container weigh machine 3c, and the write-in means 15 and 15 (broken-line section) are established just under a transfer conveyor 10 and 2nd conveyance conveyor 2b, respectively. like drawing 2 , the write-in means 15 is forced upwards according to the spring force to the contact surface with a magnetic tape 1 -- having (contact mold) -- or it has the I/O (non-contact mold) head (R/W) 25 which maintained the clearance between some between magnetic tapes, and has been arranged, and each weight value is written in the magnetic tape 1 stuck on the base of the container Ta for conveyance which moves with the I/O head (R/W) 25. The weight value of the empty container Tb for conveyance is subtracted from the weight value of the container Tb for conveyance which contained the measured object M by which child measuring was carried out, and the exact weight value of the measured object M by which child measuring was carried out is detected.

[0018] Moreover, just under 2nd conveyance conveyor 2b near the upstream of 2nd meeting place 5b of drawing 1 , the read-out means 16 (broken-line section) is established. The read-out means 16 of drawing 2 has the same I/O head (R/W) 25 as the above, and reads each weight value written in there from the magnetic tape 1 stuck on the base of the container Tb for conveyance which moves by this I/O head (R/W) 25. Moreover, in case the weight value of the measured object M is written in with the above-mentioned write-in means 15, a name of article (bar code), manufacture years time, etc. are written in coincidence if needed.

[0019] In addition, about the container Ta for goods of drawing 1 , container weigh machine 3c which measures the empty container Ta for goods, the write-in means 15, and the read-out means 16 are not established. Since the container Ta for goods makes the part united with goods, an exact weight value can be acquired from being unified into the amount value of about 1 Sadashige for every goods by subtracting the fixed weight value of the container Ta for goods from the weight value by which parent measuring was carried out. The weight value of the container Ta for goods by which parent measuring was carried out is sent to the combination operation means 4 in a controller 20 one by one according to migration sequence.

[0020] Hereafter, actuation of this equipment is explained. Operator 21A lays the container Ta for goods which contained the measured object M in the container Ta for goods, and contained the measured object M in 1st conveyance conveyor 2a. While this container Ta for goods is conveyed in the conveyance direction C, parent measuring is carried out by parent weigh machine 3a, and this weight value is sent to the combination operation means 4 one by one. The weight value of the container Ta for goods memorized beforehand is subtracted from this weight value, and the exact weight value of the measured object M by which parent measuring was carried out is detected. Then, the container Ta for goods is carried in to 1st meeting place 5a.

[0021] On the other hand, in a transfer conveyor 10, after the empty container Tb for conveyance is washed by the washing station 12, the weight value (tare) of the empty container Tb for conveyance is measured by container weigh machine 3c. This weight value is written in a magnetic tape 1 by the write-in means 15.

[0022] Operator 21B lays the container Tb for conveyance which contained the measured object M in the container Tb for conveyance of the above-mentioned empty, and contained the measured object M in 2nd conveyance conveyor 2b and 2b. Child measuring of these containers Tb and Tb for conveyance is carried out with the child weigh machines 3b and 3b, being conveyed in the conveyance direction C. This weight value is similarly written in a magnetic tape 1 by the write-in means 15. The weight value of the empty container Tb for conveyance is

subtracted from this weight value, and the exact weight value of the measured object M by which child measuring was carried out is detected.

[0023] After the weight value of the measured object M by which child measuring was carried out is read by the read-out means 16, the container Tb for conveyance is carried in to 2nd meeting place 5b. Exact combination measuring can be performed without reading the weight value of the measured object M certainly, and causing trouble to combination measuring, since the weight value of the measured object M by which combination selection was made with the carried-in measured object M is in agreement even if it is in the middle of conveyance of 2nd carrying-in conveyor 2b, and the container Tb for conveyance is sampled or conveyance sequence interchanges by this.

[0024] The weight value of the measured object M by which parent measuring was carried out [above-mentioned], and the weight value of the measured object M which child measuring was carried out and was read with the read-out means 16 It is inputted into a controller 20, memorize and the weight value of both the containers Ta and Tb transported to each location of two or more injection devices 17a and 17b by the extruder styles 23a and 23b is inputted into the combination operation means 4. The combination operation of these is carried out by the combination operation means 4, and combination is chosen. If combination is chosen, the selected container Ta for goods will be taken out by injection device 17a at the goods conveyance conveyor 8, and the container Tb for conveyance chosen by injection device 17b will be taken out by the set conveyor 6.

[0025] Thus, since the container Tb for conveyance with storage (magnetic tape) 1 which has memorized the weight value of the measured object M is carried in with 2nd carrying-in conveyor 2b in this invention united with the measured object M Even if the container Tb for conveyance which contained the measured object M is in the middle of carrying in, it is removed or carrying-in sequence interchanges Since the weight value of the measured object M by which combination selection is made with the measured object M carried in to 2nd meeting place 5b is in agreement Based on the weight value memorized to the magnetic tape 1 attached to the container Tb for conveyance, easy and exact combination measuring can be performed and the measured object M by which combination selection is made from the set conveyor 6 can be taken out. Moreover, taking out from 2nd meeting place 5b of the measured object M by which carrying in and combination selection were made to 2nd meeting place 5b of the measured object M is smoothly made by 2nd carrying-in conveyor 2b, the set conveyor 6, and injection device 17b, respectively.

[0026] Then, to timing from which between each container Tb for conveyance on a transfer conveyor 10 serves as predetermined location spacing in the conveyance direction C, a shutter 18 is opened and the container Tb for conveyance concerned transported from the set conveyor 6 is taken out by the transfer conveyor 10. And to timing with which the location of the conveyance direction C of the container Tb for conveyance on this transfer conveyor 10 and the location of the conveyance direction C of the container Ta for goods on the goods conveyance conveyor 8 concerning combination with that container Tb for conveyance agree, a shutter 19 is opened and the container Ta for goods is taken out. Therefore, both the containers Ta and Tb with which combination was chosen will be in the set condition which became the same location in the conveyance direction C, that is, was made into 1 conclusion, and will have each conveyor 8 and 10 top conveyed.

[0027] Operator 21C moves the measured object M of the container Tb for conveyance to the container Ta for goods manually, while both the containers Ta and Tb are conveyed. That is, the measured object M of child measuring is taken out and put in the empty location of the container Ta for goods with which the measured object M of parent measuring was contained from the container Tb for conveyance in the same location as the container Ta for goods.

[0028] In this way, since the containers Ta and Tb which contained the measured object M by which combination selection was made are in the set condition made into 1 conclusion, operator 21C can put easily the measured object M of the container Tb for conveyance in the container Ta for goods. Moreover, plane configuration of each conveyor 2a which conveys the measured object M, 2b, and 6, 8 and 10 is carried out. Since it synchronizes horizontally, both the containers Ta and Tb that contained the measured object M by which combination selection was made are conveyed and the measured object M of the container Tb for conveyance is made to

be moved to the container Ta for goods between them When goods tend to lose their shape and goods lose their shape like a salted cod roe with red pepper in the goods contained by the container, even if it is a case so that commodity value may fall, combination measuring can be carried out so that goods may not lose their shape.

[0029] Moreover, the container Tb for conveyance after the measured object M was moved to the container Ta for goods is transported by the transfer conveyor 10 through washing with a washing station 12 to the predetermined location near the upper edge of 2nd conveyance conveyor 2b and 2b. Since the used containers Tb for conveyance are collected and it can reuse as it is after washing by this, it is economical.

[0030] In addition, with this operation gestalt, although the magnetic tape (storage) 1 is stuck on the container Tb for conveyance, a magnetic tape (storage) 1 may be stuck on the container Ta for goods, and the read-out means 16 which reads a weight value from the write-in means 15 which writes a weight value in that magnetic tape 1, and a magnetic tape 1 in this case is established.

[0031] In addition, although the goods of fixed weight are formed with this operation gestalt combining the measured object M by which child measuring was carried out with the measured object M by which parent measuring was carried out, this invention is applicable also to the combination metering installation which omits parent measuring and obtains the goods of a fixed weight value combining the measured object M by which child measuring was carried out. In that case, the measured object M by which child measuring was carried out is manually moved from the container Tb for conveyance to the empty container Ta for goods.

[0032]
[Effect of the Invention] As mentioned above, since the container with a storage which has memorized the weight value of a measured object is conveyed united with a measured object according to this invention, even if a measured object is in the middle of conveyance, it is removed or conveyance sequence interchanges, exact combination measuring can be performed based on the weight value memorized to the storage.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the top view showing the combination metering installation concerning 1 operation gestalt of this invention.
[Drawing 2] It is the side elevation showing a container with a storage.
[Description of Notations]
The 2a-- 1st conveyance conveyor, 2b [-- A combination operation means, 5a / -- The 1st meeting place, 5b / -- The 2nd meeting place, 6 / -- A set conveyor, 8 / -- A goods conveyance conveyor, 10 / -- A transfer conveyor, 15 / -- A write-in means, 16 / -- A read-out means, Ta -- The container for goods,, Tb / -- The container for conveyance (container with a storage),, M -- Measured object.] -- The 2nd conveyance conveyor, 3a -- A parent weigh machine, 3b -- A child weigh machine, 4
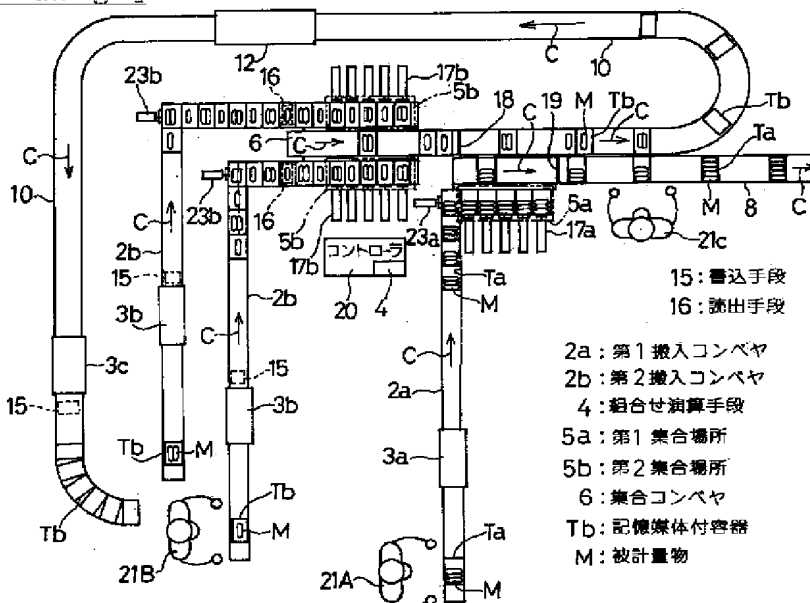
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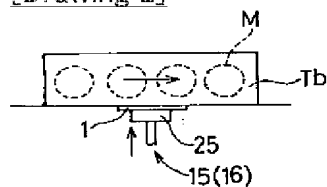damages caused by the use of this translation.

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DRAWINGS

[Drawing 1]

15：書込手段
16：読出手段

2a：第1搬入コンベヤ
2b：第2搬入コンベヤ
4：組合せ演算手段
5a：第1集合場所
5b：第2集合場所
6：集合コンベヤ
Tb：記憶媒体付容器
M：被計量物

[Drawing 2]

[Translation done.]

(51)Int.Cl.⁶　　　　　識別記号　　　　　　　　　　ＦＩ

　　Ｇ０１Ｇ　19/387　　　　　　　　　　　　　　Ｇ０１Ｇ　19/387　　　　　　Ｃ
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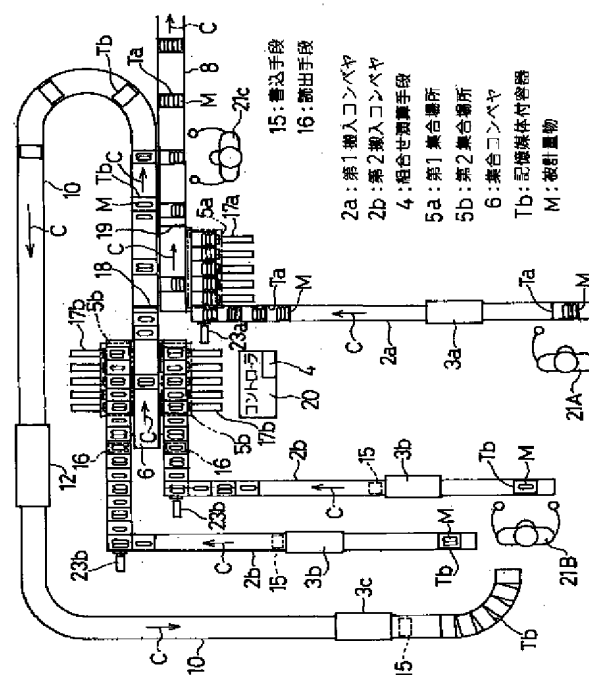　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Ｚ

審査請求　未請求　請求項の数2　OL　（全 5 頁）

(54)【発明の名称】　組合せ計量装置

(57)【要約】

【課題】被計量物の搬送順序が変わっても、容易かつ正確な組合せ計量ができる組合せ計量装置を提供する。

【解決手段】被計量物Ｍの重量値を記憶している記憶媒体１付き容器Ｔｂが被計量物Ｍと一体となって搬送されるので、被計量物Ｍが搬送途中で取り除かれたり、搬送順序が入れ替わっても、記憶媒体１に記憶している重量値に基づいて正確な組合せ計量ができる。

【特許請求の範囲】
【請求項１】　　　　　複数の被計量物を組合せ計量する組合せ計量装置であって、
被計量物を収納し被計量物と一体となって搬送され、被計量物の重量値を含む商品情報が書込みまたは読出される記憶媒体が付設されている複数の記憶媒体付き容器と、
前記記憶媒体に前記商品情報を書込む書込手段と、
前記記憶媒体から前記商品情報を読出す読出手段と、
読み出された各被計量物の重量値を組合せて、一定の許容範囲内で目標値に近い組合せを選択する組合せ演算手段とを備えた組合せ計量装置。
【請求項２】　　　　　請求項１において、
計量された被計量物を収納した複数の記憶媒体付き容器を集合場所まで搬入する搬入コンベヤと、
前記組合せ演算手段により組合せが選択された複数の記憶媒体付き容器を前記集合場所から搬出する集合コンベヤと、
前記組合せが選択された記憶媒体付き容器を前記集合場所から前記集合コンベヤへ投入する投入機構とを備えた組合せ計量装置。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、複数の被計量物を組合せ計量し、一定重量値の商品を得る組合せ計量装置に関する。
【０００２】
【従来の技術】スーパーマーケット等で販売される例えば佃煮やしぐれ煮のような商品は、容器内に一定重量のものが収納された形態で販売される場合が多い。このような一定重量値の商品を切り出す装置として、従来から、商品（被計量物）を小分けして収納した容器を搬送しながら計量器により計量し、計量後に集合場所まで搬送コンベヤで搬送し、集合場所において組合せ演算手段により各重量値に基づいて組合せ演算し一定の許容範囲内で目標値に近い組合せを選択して、選択された被計量物の容器のみを搬送コンベヤから排出して集合させる組合せ計量装置が知られている。
【０００３】この場合、計量器で計量された被計量物の重量値は、その搬送順序にしたがって、順次組合せ演算手段に送られて組合せ演算され、組合せ選択された被計量物が排出される。
【０００４】
【発明が解決しようとする課題】しかし、上記の従来装置は、被計量物が計量されたのち集合場所まで搬送される間に、例えば、被計量物を収納した容器の１つが途中で抜き取られたり、落下したり、あるいは、容器が製造機器に噛み込んでしまい、その破損した容器を取り除く必要が生じるといったトラブルが発生した場合には、集合場所に到達する被計量物の順序が変わるので、搬送順

序で送られたデータ列が被計量物の順序と一致しないこととなり、正確な組合せ計量ができない。このため、一旦、組合せ計量を停止して、被計量物の重量値を正しい順序に入れ直す必要があり、搬送順序が変わることによるトラブル処理が煩雑であるという問題があった。
【０００５】本発明は、上記の問題点を解決して、被計量物の搬送順序が変わっても、容易かつ正確な組合せ計量ができる組合せ計量装置を提供することを目的としている。
【０００６】
【課題を解決するための手段】上記目的を達成するために、本発明の一構成に係る組合せ計量装置は、複数の被計量物を組合せ計量する組合せ計量装置であって、前記被計量物を収納し被計量物と一体となって搬送され、被計量物の重量値を含む商品情報が書込みまたは読出される記憶媒体が付設されている複数の記憶媒体付き容器と、前記記憶媒体に前記商品情報を書込む書込手段と、前記記憶媒体から前記商品情報を読出す読出手段と、読み出された各被計量物の重量値を組合せて、一定の許容範囲内で目標値に近い組合せを選択する組合せ演算手段とを備えている。
【０００７】上記組合せ計量装置によれば、被計量物の重量値を記憶している記憶媒体付き容器が被計量物と一体となって搬送されるので、被計量物が搬送途中で取り除かれたり、搬送順序が入れ替わっても、記憶媒体に記憶している重量値に基づいて正確な組合せ計量ができる。
【０００８】好ましくは、計量された被計量物を収納した複数の記憶媒体付き容器を集合場所まで搬入する搬入コンベヤと、前記組合せ演算手段により組合せが選択された複数の記憶媒体付き容器を前記集合場所から搬出する集合コンベヤと、前記組合せが選択された記憶媒体付き容器を前記集合場所から前記集合コンベヤへ投入する投入機構とを備えている。従って、被計量物の集合場所への搬入および組合せ選択された被計量物の集合場所からの搬出が、搬入コンベヤ，集合コンベヤおよび投入機構によってそれぞれ円滑になされる。
【０００９】
【発明の実施の形態】以下、本発明の実施形態を図面に基づいて説明する。図１に、本発明の一実施形態に係る組合せ計量装置の平面図を示す。本装置は、辛子明太子のような被計量物を収納し被計量物と一体となって搬送され、被計量物の重量値を含む商品情報が書込みまたは読出される記憶媒体が付設されている複数の記憶媒体付き容器を用いて、複数の被計量物を組合せ計量し、一定重量値の商品を得るものであり、複数の被計量物を組合せる際に、例えば、組合せ物品の主要部を構成する被計量物を親計量し、残部を構成する被計量物を子計量したうえで、両重量値を組合せる。
【００１０】本装置は、被計量物Ｍを載置した商品用容

器Ｔａを搬送しながら親計量する親計量機３ａを有し、親計量された被計量物Ｍを載置した商品用容器Ｔａを搬送方向Ｃに第１集合場所５ａまで水平に搬入する第１搬入コンベヤ２ａと、被計量物Ｍを載置した搬送用容器Ｔｂを搬送しながら子計量する子計量機３ｂを有し、子計量された被計量物Ｍを載置した搬送用容器Ｔｂを搬送方向Ｃに第２集合場所５ｂまで水平に搬入する第２搬入コンベヤ２ｂとを備えている。この例では、第２搬入コンベヤ２ｂは、子計量される被計量物の組合せ参加数を多くするため並列に２つ配置されている。

【００１１】図２に示すように、搬送用容器Ｔｂの底部には磁気テープのような記憶媒体１が予め貼付されている。この磁気テープ１には被計量物の重量値を含む商品情報が記憶されている。商品情報には品名（商品コード）や製造年月日時等が含まれる。磁気テープは搬送用容器Ｔａの側部に貼ってもよい。記憶媒体１としては、磁気ヘッド（入出力ヘッド）に接触または非接触で書込みおよび読出しが行われる磁気テープの他に、磁気カード，光カード，無線式のＩＣカードおよびバーコード等を用いてもよい。

【００１２】図１のように、本装置は、上記親計量機３ａおよび子計量機３ｂから得られた親計量および子計量の被計量物の重量値を組合せて、一定の許容範囲内で目標値に近い組合せを選択する組合せ演算手段４を備えている。この組合せ演算手段４は、この組合せ計量装置全体を制御するコントローラ２０内に設けられている。

【００１３】上記第２搬入コンベヤ２ｂ，２ｂの第２集合場所５ｂ，５ｂ間に集合コンベヤ６が配置されており、第２集合場所５ｂ，５ｂから組合せが選択された複数の搬送用容器（記憶媒体付き容器）Ｔｂを搬送方向Ｃに水平に搬出する。組合せが選択された搬送用容器Ｔｂは、複数のプッシャーからなる投入機構１７ｂにより、搬送方向Ｃに直交する方向に押し出されて、第２集合場所５ｂ，５ｂから集合コンベヤ６へ投入される。組合せ演算結果によっては、複数の搬送用容器Ｔｂが同時に投入される。搬送用容器Ｔｂが集合コンベヤ６へ投入されると、押出機構２３ｂによりつぎの搬送用容器Ｔｂが第２集合場所５ｂに押し出されて順次搬入される。

【００１４】上記集合コンベヤ６に隣接して商品搬送コンベヤ８が設けられている。この商品搬送コンベヤ８は、第１集合場所５ａから組合せが選択されて搬出された商品用容器Ｔａを搬送方向Ｃに水平に搬送する。組合せが選択された商品用容器Ｔａは、複数のプッシャーからなる投入機構１７ａにより、搬送方向Ｃに直交する方向に押し出されて、第１集合場所５ａから商品搬送コンベヤ８へ投入される。商品用容器Ｔａが商品搬送コンベヤ８へ投入されると、押出機構２３ａによりつぎの商品用容器Ｔａが第１集合場所５ａに押し出されて順次搬入される。

【００１５】上記商品用容器Ｔａは、上記組合せが選択

されて集合コンベヤ６で搬出される複数の搬送用容器Ｔｂからなる容器群と同期して搬送方向Ｃに搬送され、その間に搬送用容器Ｔｂの被計量物Ｍが商品用容器Ｔａに手作業で移し替えられる。上記集合コンベヤ６の下流端６ａに接続された移送コンベヤ１０は、被計量物Ｍが商品用容器Ｔａに移し替えられた後の空の搬送用容器Ｔｂを、第２搬送コンベヤ２ｂ，２ｂの上流端近傍の所定の場所まで水平に移送させる。

【００１６】上記移送コンベヤ１０の上流端１０ａ付近の所定位置にシャッタ１８が、商品搬送コンベヤ８の所定位置にシャッタ１９がそれぞれ設けられており、これらシャッタ１８，１９の開閉タイミングにより、上記搬送用容器Ｔｂと商品用容器Ｔａとの同期がとられる。また、移送コンベヤ１０は、搬送用容器Ｔｂを洗浄する洗浄装置１２と、空の搬送用容器Ｔｂの重量（風袋）を搬送しながら計量する容器計量機３ｃとを有している。本装置では、上記の被計量物Ｍを搬送する第１搬入コンベヤ２ａ，第２搬入コンベヤ２ｂ，集合コンベヤ６，商品搬送コンベヤ８および移送コンベヤ１０は平面配置されている。

【００１７】上記子計量機３ｂおよび容器計量機３ｃの下流側近傍であって、移送コンベヤ１０および第２搬送コンベヤ２ｂの真下には、それぞれ書込手段１５，１５（破線部）が設けられている。図２のように、書込手段１５は、磁気テープ１との接触面に対してばね力により上方へ押し付けられる（接触型）か、または磁気テープとの間に若干の隙間を保って配置された（非接触型）入出力ヘッド（Ｒ／Ｗ）２５を有しており、移動する搬送用容器Ｔａの底面に貼付された磁気テープ１に入出力ヘッド（Ｒ／Ｗ）２５で各重量値を書込む。子計量された被計量物Ｍを収納した搬送用容器Ｔｂの重量値から空の搬送用容器Ｔｂの重量値が減算されて、子計量された被計量物Ｍの正確な重量値が検出される。

【００１８】また、図１の第２集合場所５ｂの上流側近傍の第２搬送コンベヤ２ｂの真下には、読出手段１６（破線部）が設けられている。図２の読出手段１６は上記と同様の入出力ヘッド（Ｒ／Ｗ）２５を有し、この入出力ヘッド（Ｒ／Ｗ）２５により、移動する搬送用容器Ｔｂの底面に貼付された磁気テープ１から、そこに書込まれた各重量値を読出す。また、上記書込手段１５で被計量物Ｍの重量値を書込む際に、必要に応じて品名（商品コード）や製造年月日時等を同時に書込む。

【００１９】なお、図１の商品用容器Ｔａについては、空の商品用容器Ｔａを計量する容器計量機３ｃ，書込手段１５および読出手段１６が設けられていない。商品用容器Ｔａは、商品と一体となってその一部をなすものなので、商品ごとにほぼ一定重量値に統一されていることから、親計量された重量値から商品用容器Ｔａの一定重量値を減算することで正確な重量値を得ることができる。親計量された商品用容器Ｔａの重量値は、移送順序

にしたがって順次、コントローラ２０内の組合せ演算手段４に送られる。

【００２０】以下、本装置の動作を説明する。作業者２１Ａは、商品用容器Ｔａに被計量物Ｍを収納し、その被計量物Ｍを収納した商品用容器Ｔａを第１搬送コンベヤ２ａに載置する。この商品用容器Ｔａは搬送方向Ｃに搬送されながら親計量機３ａで親計量され、この重量値は順次組合せ演算手段４に送られる。この重量値から予め記憶されている商品用容器Ｔａの重量値が減算されて、親計量された被計量物Ｍの正確な重量値が検出される。その後、商品用容器Ｔａは第１集合場所５ａに搬入される。

【００２１】一方、移送コンベヤ１０において、洗浄装置１２で空の搬送用容器Ｔｂが洗浄された後に、空の搬送用容器Ｔｂの重量値（風袋）が容器計量機３ｃで計量される。この重量値は、書込手段１５により磁気テープ１に書込まれる。

【００２２】作業者２１Ｂは、上記空の搬送用容器Ｔｂに被計量物Ｍを収納し、その被計量物Ｍを収納した搬送用容器Ｔｂを第２搬送コンベヤ２ｂ，２ｂに載置する。この搬送用容器Ｔｂ，Ｔｂは搬送方向Ｃに搬送されながら子計量機３ｂ，３ｂで子計量される。この重量値は書込手段１５により同様に、磁気テープ１に書込まれる。この重量値から空の搬送用容器Ｔｂの重量値が減算されて、子計量された被計量物Ｍの正確な重量値が検出される。

【００２３】子計量された被計量物Ｍの重量値は読出手段１６により読出された後、搬送用容器Ｔｂは第２集合場所５ｂに搬入される。これにより、第２搬入コンベヤ２ｂの搬送途中で搬送用容器Ｔｂが抜き取られたり、搬送順序が入れ替わっても、搬入された被計量物Ｍと組合せ選択された被計量物Ｍの重量値が一致するので、被計量物Ｍの重量値が確実に読出されて、組合せ計量に支障をきたすことなく、正確な組合せ計量ができる。

【００２４】上記親計量された被計量物Ｍの重量値と、子計量されて読出手段１６で読出された被計量物Ｍの重量値とは、コントローラ２０に入力されて記憶され、押出機構２３ａ，２３ｂによって複数の投入機構１７ａ，１７ｂのそれぞれの位置へ移送された両容器Ｔａ，Ｔｂの重量値が組合せ演算手段４に入力され、これらが組合せ演算手段４により組合せ演算されて、組合せが選択される。組合せが選択されると、投入機構１７ａにより、選択された商品用容器Ｔａが商品搬送コンベヤ８に搬出され、投入機構１７ｂにより、選択された搬送用容器Ｔｂが集合コンベヤ６に搬出される。

【００２５】このように、本発明では、被計量物Ｍの重量値を記憶している記憶媒体（磁気テープ）１付きの搬送用容器Ｔｂが被計量物Ｍと一体となって第２搬入コンベヤ２ｂで搬入されるので、被計量物Ｍを収納した搬送用容器Ｔｂが搬入途中で取り除かれたり、搬入順序が入

れ替わっても、第２集合場所５ｂに搬入された被計量物Ｍと組合せ選択される被計量物Ｍの重量値が一致しているから、搬送用容器Ｔｂに付設した磁気テープ１に記憶している重量値に基づいて、容易かつ正確な組合せ計量ができ、集合コンベヤ６から組合せ選択される被計量物Ｍを搬出することができる。また、被計量物Ｍの第２集合場所５ｂへの搬入および組合せ選択された被計量物Ｍの第２集合場所５ｂからの搬出が、第２搬入コンベヤ２ｂ、集合コンベヤ６および投入機構１７ｂによってそれぞれ円滑になされる。

【００２６】その後、移送コンベヤ１０上の各搬送用容器Ｔｂ間が搬送方向Ｃに所定位置間隔となるようなタイミングで、シャッタ１８が開かれて、集合コンベヤ６から移送された当該搬送用容器Ｔｂが移送コンベヤ１０に搬出される。そして、この移送コンベヤ１０上の搬送用容器Ｔｂの搬送方向Ｃの位置と、その搬送用容器Ｔｂとの組合せに係る商品搬送コンベヤ８上の商品用容器Ｔａの搬送方向Ｃの位置とが合致するようなタイミングで、シャッタ１９が開かれて、商品用容器Ｔａが搬出される。したがって、組合せが選択された両容器Ｔａ，Ｔｂは搬送方向Ｃに同一位置となって、つまり１まとめにしたセット状態となって各コンベヤ８，１０上を搬送されることになる。

【００２７】作業者２１Ｃは、両容器Ｔａ，Ｔｂが搬送される間に、商品用容器Ｔａに搬送用容器Ｔｂの被計量物Ｍを手作業で移し替える。つまり、親計量の被計量物Ｍが収納された商品用容器Ｔａの空き場所に、商品用容器Ｔａと同一位置にある搬送用容器Ｔｂから子計量の被計量物Ｍを取り出して詰める。

【００２８】こうして、組合せ選択された被計量物Ｍを収納した容器Ｔａ，Ｔｂが１まとめにされたセット状態になっているので、作業者２１Ｃは搬送用容器Ｔｂの被計量物Ｍを商品用容器Ｔａに容易に詰めることができる。また、被計量物Ｍを搬送する各コンベヤ２ａ，２ｂ，６，８，１０を平面配置して、組合せ選択された被計量物Ｍを収納した両容器Ｔａ，Ｔｂを水平に同期して搬送し、その間に搬送用容器Ｔｂの被計量物Ｍを商品用容器Ｔａに移し替えさせるので、容器に収納される商品が、例えば辛子明太子のように、商品の形が崩れやすく、商品の形が崩れると商品価値が低下するような場合であっても、商品の形が崩れないように組合せ計量できる。

【００２９】また、被計量物Ｍが商品用容器Ｔａに移し替えられた後の搬送用容器Ｔｂは、移送コンベヤ１０により、洗浄装置１２での洗浄を経て、第２搬送コンベヤ２ｂ，２ｂの上流端近傍の所定の場所まで移送される。これにより、使用済の搬送用容器Ｔｂは回収されて、洗浄後にそのまま再利用できるので、経済的である。

【００３０】なお、この実施形態では、搬送用容器Ｔｂのみに磁気テープ（記憶媒体）１を貼付しているが、商

品用容器Ｔａに磁気テープ（記憶媒体）１を貼付しても
よく、この場合には、その磁気テープ１に重量値を書込
む書込手段１５および磁気テープ１から重量値を読出す
読出手段１６が設けられる。

【００３１】なお、この実施形態では、親計量された被
計量物Ｍと子計量された被計量物Ｍとを組合せて一定重
量の商品を形成しているが、親計量を省略し、子計量さ
れた被計量物Ｍを組合せて一定重量値の商品を得る組合
せ計量装置にも本発明を適用できる。その場合、子計量
された被計量物Ｍを搬送用容器Ｔｂから空の商品用容器
Ｔａに手作業で移し替える。

【００３２】

【発明の効果】以上のように、本発明によれば、被計量
物の重量値を記憶している記憶媒体付き容器が被計量物
と一体となって搬送されるので、被計量物が搬送途中で

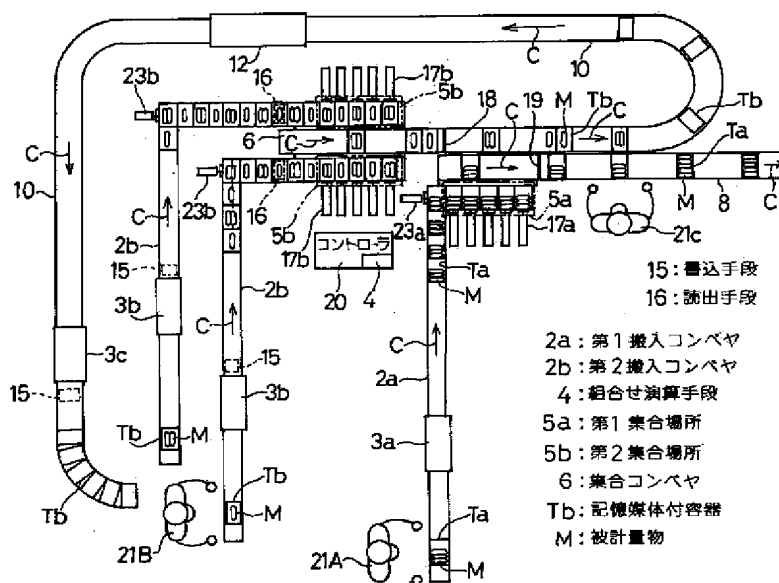取り除かれたり、搬送順序が入れ替わっても、記憶媒体
に記憶している重量値に基づいて正確な組合せ計量がで
きる。

【図面の簡単な説明】

【図１】本発明の一実施形態に係る組合せ計量装置を示
す平面図である。

【図２】記憶媒体付き容器を示す側面図である。

【符号の説明】

２ａ…第１搬送コンベヤ、２ｂ…第２搬送コンベヤ、３
ａ…親計量機、３ｂ…子計量機、４…組合せ演算手段、
５ａ…第１集合場所、５ｂ…第２集合場所、６…集合コ
ンベヤ、８…商品搬送コンベヤ、１０…移送コンベヤ、
１５…書込手段、１６…読出手段、Ｔａ…商品用容器、
Ｔｂ…搬送用容器（記憶媒体付き容器）、Ｍ…被計量
物。

【図１】

【図２】